

**What is claimed is:**

1. A system for automatically generating source code from a functional model comprising:  
  
a modeler for defining at least one of a plurality of code elements and a structure of a code block and generating a graphical representation of the at least one code element and structure of the code block.
2. The system of claim 1, further comprising a user interface for receiving the definition of the at least one code element and the structure of the code block
3. The system of claim 1, further comprising a selector for selecting at least one of a plurality of programming languages in which to generate the source code from the functional model.
4. The system of claim 3, further comprising a code generator for receiving the graphical representation of the at least one code element and the structure of the code block and the at least one programming language and generating source code in each of the at least one programming languages.
5. The system of claim 2, wherein the at least one programming language comprises C++.
6. The system of claim 2, wherein the at least one programming languages comprises C#.
7. The system of claim 2, wherein the at least one programming languages comprises Visual Basic.
8. A method of automatically generating source code from a functional software model comprising:  
  
defining a plurality of code elements within a block of programming code;  
  
specifying a structure of the block of programming code including the plurality of code elements;

generating from the plurality of code elements and the structure of the block of programming code including the plurality of code elements a graphical representation of the code elements and flow of the block of programming code.

9. The method of claim 8, further comprising a user interface for receiving the definition of the plurality of code elements with the block of programming code and for specifying the structure of the block of programming code.

10. The method of claim 8, further comprising specifying at least one target language in which source code for the graphical representation is to be generated.

11. The method of claim 10, further comprising generating the source code in the at least one target language.

12. The method of claim 8, wherein a one of the plurality of code elements comprises a variable, comment, constant, object, function, method, prototype, member, data type, callback, delegate, reference, field, variant, property, interface, class, type, enumeration, structure, primitive, array, or event handle.

13. The method of claim 8, wherein a one of the plurality of code elements comprises a code relation.

14. The method of claim 13, wherein the code relation comprises a mathematical operator.

15. The method of claim 8, wherein a one of the plurality of code elements comprises an evaluation entity.

16. The method of claim 15, wherein the evaluation entity comprises one of a method call, a plurality of code entities, a plurality of code relations or an instantiation of a class.

17. The method of claim 8, wherein a one of the plurality of code elements comprises a passive entity.

18. The method of claim 15, wherein the passive entity comprises a comment or a modeling diagram.

19. The method of claim 8, wherein a one of the plurality of code elements comprises a block entity.
20. The method of claim 19, wherein the block entity comprises a method entity, a member entity, a class entity a namespace entity or a file entity.
21. The method of claim 20, wherein a many-to-many relationship exists between block entities.
22. A computer-readable medium including computer-readable instructions for  
  
defining a plurality of code elements within a block of programming code;  
  
specifying a structure of the block of programming code including the plurality of code elements;  
  
generating from the plurality of code elements and the structure of the block of programming code including the plurality of code elements a graphical representation of the code elements and flow of the block of programming code.